

I CLAIM:

1. A carriage for carrying articles, said carriage defining a longitudinal axis and comprising a frame movable over ground in a direction parallel to said longitudinal axis, a
5 powered driving device mounted to said frame for selectively driving said carriage along said longitudinal axis, a powered article-carrying device mounted to said frame for releasably carrying articles on said carriage, guide members laterally protruding beyond said frame on both said carriage sides for engagement of said guide members against objects outboard of said carriage for allowing self-alignment of said carriage with respect to the objects when said carriage is
10 moving along said longitudinal axis, and a linkage pivotally attached to said frame and carrying said guide members, said guide members forced by said linkage into an integral common displacement relative to said frame so as to remain symmetrically disposed relative to said frame at all times, said guide members being movable relative to said frame between an inner limit position toward said frame and an outer limit position away from said frame, said carriage also
15 comprising a biasing member mounted to said frame and continuously biasing said guide members through the instrumentality of said linkage towards said outer limit position.

2. A system for selectively moving articles into and out of a number of loading areas, said system having mutually transverse longitudinal and lateral axes defining
20 longitudinal and lateral directions, respectively, said system comprising a carriage movable along variable longitudinal distances in said longitudinal direction, said carriage having full longitudinal movement capability throughout said loading areas and being capable of depositing and retrieving an article at any point in said longitudinal direction, said carriage being movable also along a continuous range of variable lateral distances in said lateral direction, said variable
25 lateral distances being determined by an article having any lateral position along said continuous range of lateral distances, wherein said carriage can selectively engage and release the article at a predetermined lateral position.

3. A system as defined in claim 2, further comprising a movable bogie, said bogie being capable of moving said carriage in said lateral direction.

5 4. A system according to claim 3, wherein said bogie is guided by at least one rail along said lateral direction.

10 5. A system according to claim 2, wherein at least one of said carriage and the article is indexed to a predetermined lateral position.

6. A system according to claim 5, wherein said longitudinal and lateral axes define a horizontal plane.

15 7. A system according to claim 6, wherein said longitudinal and lateral axes are perpendicular.

8. A system according to claim 7, further comprising a conveyor for transporting the articles.

20 9. A system according to claim 6, further comprising a conveyor for transporting the article, with said conveyor being located in a plane vertically spaced from said horizontal plane defined by said longitudinal and lateral axes of said system.

25 10. A system according to claim 7, wherein said number of loading areas define longitudinal dimensions of equal value.

11. A system according to claim 8, wherein said conveyor is parallel to said

lateral axis.

12. A system according to claim 11, wherein said conveyor is elevated relative to said horizontal plane defined by said longitudinal and lateral axes.

13. A method for selectively moving articles into and out of a number of loading areas with a system having mutually transverse longitudinal and lateral axes defining longitudinal and lateral directions, respectively, said system comprising a carriage, said method comprising the steps of moving said carriage along variable longitudinal distances in said longitudinal direction, with said carriage having full longitudinal movement capability throughout said loading areas, depositing or retrieving an article at any point in said longitudinal direction with said carriage, and moving said carriage along variable lateral distances in said lateral direction when said carriage is not moving in said longitudinal direction, said variable lateral distances being determined by an article having a lateral position, wherein said carriage can selectively engage and release the article at predetermined lateral positions.

14. A method for loading an article from an initial position at any point into a loading area with a system having mutually transverse longitudinal and lateral axes defining longitudinal and lateral directions, respectively, said system comprising a carriage comprising a powered article-carrying device, said method comprising the steps of:

- moving said carriage along said lateral direction to a carriage lateral position laterally aligned with said article initial position;
- moving said carriage along said longitudinal direction to a carriage longitudinal position determined by said article initial position;
- retrieving the article with said article-carrying device;
- moving said carriage along said longitudinal direction towards said loading area; and
- depositing the article in said loading area with said article-carrying device, at any

longitudinal point within said loading area.

15. A method for unloading an article from an initial position at any point in a loading area to a final position, with a system having mutually transverse longitudinal and lateral axes defining longitudinal and lateral directions, respectively, said system comprising a carriage comprising a powered article-carrying device, said method comprising the steps of:

- moving said carriage along said lateral direction to a carriage lateral position laterally aligned with said article initial position;
- moving said carriage along said longitudinal direction toward said loading area to a carriage longitudinal position determined by said article initial position;
- retrieving the article with said article-carrying device;
- moving said carriage along said longitudinal direction away from said loading area; and
- depositing the article in said final position with said article-carrying device.

16. A method for moving an article from an initial position to a final position, with a selected one of said initial and final positions being within a loading area having an estimated position and a real position which may be laterally offset relative to said estimated position, with a system having mutually transverse longitudinal and lateral axes defining longitudinal and lateral directions, respectively, said system comprising a carriage comprising a powered article-carrying device and a bogie capable of carrying said carriage and having a pair of pivotable gates defining outer free ends, said method comprising the steps of:

- a) moving said bogie carrying said carriage along said lateral direction to a carriage lateral position longitudinally aligned with said loading area estimated position;
- b) opening said bogie gates until at least one of said gates abuts against a reaction surface corresponding to said loading area real position;
- c) rectifying the position of said bogie along said lateral direction according to the respective angular positions of said gates, for longitudinally aligning said bogie with said loading

area real position;

d) moving said carriage along said longitudinal direction towards said article initial position to a carriage longitudinal position determined by said article initial position;

e) retrieving the article with said article-carrying device;

5 f) moving said carriage along said longitudinal direction towards said article final position to a carriage longitudinal position determined by said article final position; and

g) depositing the article in said final position with said article-carrying device.

10 17. A method as defined in claim 16, wherein in step (b) said bogie gates are opened until both said gates abut against respective reaction surfaces corresponding to said loading area real position.

15 18. An alignment mechanism for use with a carriage selectively movable along mutually transverse longitudinal and lateral axes defining longitudinal and lateral directions, respectively, said alignment mechanism comprising a pair of arms, each said arm being biased transversely relative to said longitudinal axis and outwardly from said carriage, wherein said arms may engage an object outboard of said carriage as said carriage moves along said longitudinal axis for self-alignment of said carriage along said longitudinal axis.

20 19. An alignment mechanism as defined in claim 18, wherein said arms each have an outer free end carrying a guide member destined to engage an object outboard of said carriage.

25 20. An alignment mechanism as defined in claim 19, wherein each said guide member is a guide wheel rotatable about a vertical axis.

21. An alignment mechanism as defined in claim 19, wherein each said arm

is articulably outwardly biased.

22. An alignment mechanism as defined in claim 21, wherein each said arm is articulably linked to the other said arm to form a linkage for pivotal attachment thereof to said carriage.

23. An alignment mechanism as defined in claim 22, wherein said guide members are forced by said linkage into an integral common displacement for remaining symmetrically disposed relative to said carriage at all times, said guide members being movable between an inner limit position and an outer limit position, said alignment mechanism further comprising a biasing member mounted to said frame and continuously biasing said guide members through the instrumentality of said linkage towards said outer limit position.

24. An automated system for selectively moving articles into and out of a number of loading areas, said system having mutually transverse longitudinal and lateral axes defining longitudinal and lateral directions, respectively, said system comprising a carriage autonomously movable along variable longitudinal distances in said longitudinal direction, said carriage having full longitudinal movement capability in said loading areas and being capable of depositing or retrieving an article at any point in said longitudinal direction, said carriage being movable also along variable lateral distances in said lateral direction, said variable lateral distances being determined by an article having a lateral position, wherein said carriage can selectively engage and release the article at a predetermined lateral position.

25. A system for selectively loading articles into and unloading articles from a number of loading areas, said system having mutually transverse longitudinal and lateral axes defining longitudinal and lateral directions, respectively, said system comprising:

- an automated carriage movable along variable longitudinal distances in said longitudinal

direction, said carriage having full longitudinal movement capability in said loading areas and being capable of depositing or retrieving an article at any point in said longitudinal direction, said carriage being movable also along variable lateral distances in said lateral direction, said variable lateral distances being determined by an article having a lateral position, whereby said carriage
5 can selectively engage and release the article at a predetermined lateral position; and

- an automated article handling assembly capable of moving the articles towards and away from said carriage;

wherein said automated carriage and said automated article handling assembly have independent movement capability.

26. A system as defined in claim 25, wherein said automated carriage and said automated article handling assembly further have simultaneous movement capability.

27. A system as defined in claim 2, further comprising at least one additional
15 carriage similar to the first-named carriage.

28. A system for selectively moving articles into and out of a number of loading areas, said system having mutually transverse longitudinal and lateral axes defining longitudinal and lateral directions, respectively, said system comprising a carriage movable along
20 variable longitudinal distances in said longitudinal direction, said carriage being longitudinally movable along said loading areas and being capable of depositing and retrieving an article at any point in said longitudinal direction, said system further comprising a bogie movable along variable lateral distances in said lateral direction, said variable lateral distances being determined by an article having a lateral position, said bogie being provided with a pair of gates pivotable
25 between a closed position and an opened position for abutment of said gates against outboard surfaces corresponding to a said loading area in their said opened position, said system also comprising indexing means capable of rectifying the position of said bogie according to the

respective angular positions of said bogie gates and capable of rectifying the position of the article relative to said bogie, wherein said carriage is carried by said bogie along said lateral direction and can move out of said bogie along said longitudinal direction, and wherein said carriage can selectively engage and release the article at a predetermined lateral position.

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